

RIVER
RESTORATION
PROFESSIONAL
CERTIFICATE
PROGRAM &
FIELD INSTITUTE

Registration now open
for spring classes and
2006 Field Institute.



**Portland State University
Environmental Sciences & Resources**

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Partners

US Fish and Wildlife Service • NOAA Fisheries Habitat Restoration
Program • River Restoration Northwest • North Coast Land
Conservancy • Henderson Land Services • Interfluve • Jones &
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2006
CORE COURSE
CALENDAR

CORE COURSE DESCRIPTIONS

**ESR 221: Introduction to River
Science and Management**

This required introductory course provides a wide-angle view of the constantly evolving philosophy and science of river management and restoration. It will give you an understanding of the full range of skills and project roles needed to develop and implement a river restoration project.

The 2.5-day course is designed for consultants, natural resources managers, regulators, environmental planners, engineers, biologists, contractors and concerned members of the public that have an interest in river restoration. It will be led by facilitator and program technical director Dr. Janine Castro, a regional expert in river restoration and geomorphology, and will feature invited speakers and field visits. Topics include:

- ◆ Restoration philosophy
- ◆ History of river engineering
- ◆ Watershed processes & channel form
- ◆ Hydrology
- ◆ Hydraulics
- ◆ Soil mechanics
- ◆ Sediment dynamics
- ◆ Geomorphology
- ◆ Vegetation dynamics
- ◆ Stream classification systems
- ◆ Stream continuum concept
- ◆ Useful models

Dates: April 18-20 and September 12-14, 2006

CEUs: 2.0 **Opt. Graduate Credits:** 1

Facilitator: Janine M. Castro, PhD, RG,
Geomorphologist, US Fish and Wildlife Service,
Portland, Oregon.

ESR 222: Stream Ecology

This three-day course will provide essential knowledge of the types of streams present in the Pacific Northwest and the habitat and aquatic ecosystems common and unique to each.

From ephemeral mountain creeks to large, industrialized waterways like the Willamette River, each stream type has its own specifically adapted assemblage of aquatic creatures who interact in a complex web of nutrient processing, predation, and habitat alteration.

The instruction will focus on stream ecology as it relates to river restoration planning, implementation, and monitoring. Participants will learn how the success of river restoration is dependent on the proper assessment of current and desired-condition stream ecology. Instruction will be field-intensive and focused on the biology and habitat needs of salmonids. This 3-day course will teach you the basics of:

- ◆ Stream types and habitat elements
- ◆ Stream biodiversity, limiting factors and carrying capacity
- ◆ Water quantity and quality
- ◆ Life cycles, seasonality, and nutrient cycling
- ◆ Biofilms
- ◆ Aquatic species and predator/prey relationships
- ◆ Environmental sustainability: concepts and connections

Dates: October 11-13, 2006

CEUs: 2.4 **Opt. Graduate Credits:** 2

Facilitator: Randy Reeve, Senior Fisheries
Biologist, Parametrix, Corvallis, Oregon.

**ESR 223: Stream
Reconnaissance and
Assessment Tools**

This course will familiarize participants with the most widely-used assessment and reconnaissance methods in our region, and will provide a framework for developing river restoration assessment and monitoring plans. The focus will be on best practice methods and integrating new studies with watershed-wide and regional corridor studies.

Led by Dr. Willis McConnaha, the course will feature instruction by regional experts in stream corridor evaluation / assessment techniques and modeling.

This 3.5-day course will teach you the basics of:

- ◆ Watershed analyses
- ◆ Interrelationships of watersheds and streams
- ◆ Geomorphic assessments
- ◆ Evaluating stream stability
- ◆ Riparian and aquatic habitat evaluation and assessment techniques

2006 CORE COURSE CALENDAR

Course Number/Title	April	May	June		July	August	September		October	November	December		
ESR 221 — INTRO TO RIVER SCIENCE & MANAGEMENT	APRIL 18-20								SEPT. 12-14				
	\$350								\$350				
ESR 222 — STREAM ECOLOGY										OCT. 11-13			
										\$425			
ESR 223 — STREAM RECONNAISSANCE & ASSESSMENT TOOLS										OCT 24-27			
										\$550			
ESR 224 — RESTORATION DESIGN											NOV. 13-17		
											\$750		
ESR 225 — TEAMBUILDING, COMMUNICATIONS & PROJECT MANAGEMENT													DEC. 5-7
				\$350									
ESR 226 — RIVER RESTORATION FIELD INSTITUTE					JULY 10-AUGUST 4								
					\$2,850								

- ◆ Stream classification
- ◆ Air photo interpretation
- ◆ Remote sensing
- ◆ Data collection and management
- ◆ Useful models
- ◆ Monitoring parameters, design, and funding
- ◆ Integrating regulations and permits

Dates: October 24-27, 2006

CEUs: 2.8 **Opt. Graduate Credit:** 2

Facilitator: Willis McConnaha, PhD, Sr Fisheries Biologist, Jones & Stokes Associates, Portland, Oregon.

ESR 224: Restoration Design

In this course, participants will learn about a variety of design approaches and steps for alternative analysis of stream restoration projects. A design process will be demonstrated that integrates landscape scale considerations of geology, soils, and hydrology, with stream processes of hydraulics, sediment transport and geomorphology. Alternative analysis will focus on providing resiliency to stream systems in light of

dominant stream processes overlain with biologic goals and human values.

The overall focus will be on understanding and design of best management practices in the river restoration context, and on use of process-based design approaches. Classroom and field case examples will be used to demonstrate implementation of a variety of design approaches and techniques. This 4.5-day course will teach you the basics of:

- ◆ Obtaining input and scientific information
- ◆ Placing alternatives in context
 - Geomorphology in restoration design
 - Regional and local hydrology
 - Channel geometry and river morphology
 - Sediment budget, transport and management
- ◆ Gathering and analyzing basic data
- ◆ Design process, products and practice
 - The practice of design
 - Standards, specifications and design notes
 - Design drawings - conveying information
 - Operation, maintenance and monitoring plans

- ◆ Best management practices
- ◆ Construction sequencing
- ◆ Environmental change and building resilience

Dates: November 13-17, 2006

CEUs: 3.4 **Opt. Graduate Credit:** 2

Facilitator: Rob Sampson, PE, State Conservation Engineer, USDA Natural Resources Conservation Service, Boise, Idaho.

ESR 225: Teambuilding, Communications, and Project Management

This course will lead participants through the process of building multi-agency and interdisciplinary teams, setting up administrative systems, and creating internal and public communication plans. Case examples will be provided for various restoration project types and scales. Facilitated by Bruce Henderson, speakers will include representatives from state and federal agencies, and design, construction, and watershed council sectors. This 2.5-day course will teach you the basics of:

- ◆ Project management principles and goals management
- ◆ Building the project: choosing and managing interdisciplinary teams
- ◆ Communications and information management
- ◆ Defining the internal capacity to do the job
- ◆ Project scheduling
- ◆ Marketing and public relations
- ◆ Stakeholder assessment, management, and compliance
- ◆ Administration: coordinating MOAs and contracts
- ◆ Project levels, structures, schedule, and fiscal management
- ◆ Managing designers, construction crews, contractors, and volunteers
- ◆ Designer-contractor interactions and responsibilities
- ◆ Restoration politics

Dates: December 5-7, 2006

CEUs: 2.1 **Opt. Graduate Credit:** 1

Facilitator: Bruce Henderson, President, Henderson Land Services, LLC, Lake Oswego, Oregon.